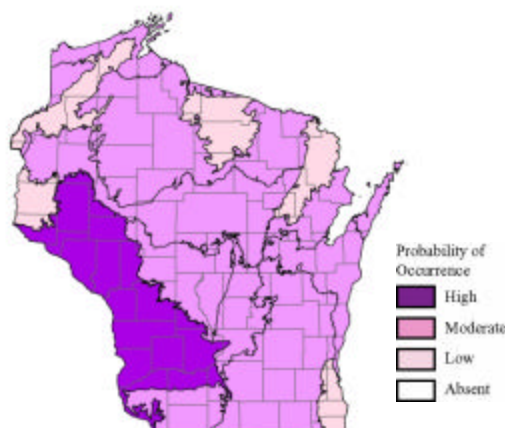


## Northern Long-eared Bat (*Myotis septentrionalis*)

### Species Assessment Scores\*

State rarity:	2
State threats:	3
State population trend:	3
Global abundance:	4
Global distribution:	4
Global threats:	2
Global population trend:	3
Mean Risk Score:	3
Area of importance:	2

\* Please see the [Description of Vertebrate Species Summaries \(Section 3.1.1\)](#) for definitions of criteria and scores.



### Ecological Landscape Associations

Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

### Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Coldwater streams
Forest Transition	Coldwater streams
Forest Transition	Coolwater streams
North Central Forest	Coldwater streams
North Central Forest	Coolwater streams
North Central Forest	Ephemeral pond
Superior Coastal Plain	Coldwater streams
Superior Coastal Plain	Coolwater streams
Western Coulee and Ridges	Coldwater streams
Western Coulee and Ridges	Coolwater streams
Western Coulee and Ridges	Emergent marsh
Western Coulee and Ridges	Ephemeral pond
Western Coulee and Ridges	Floodplain forest
Western Coulee and Ridges	Hemlock relict
Western Coulee and Ridges	Oak barrens
Western Coulee and Ridges	Oak woodland
Western Coulee and Ridges	Shrub-carr
Western Coulee and Ridges	Southern dry forest
Western Coulee and Ridges	Southern dry-mesic forest
Western Coulee and Ridges	Southern mesic forest
Western Coulee and Ridges	Submergent marsh
Western Coulee and Ridges	Warmwater rivers

### Threats and Issues

- Lack of information on basic ecology and population trends of the northern long-eared bat is one of the greatest threats to conservation of this species.
- The availability of hibernacula (caves and mines) with appropriate environmental conditions may be a threat to this species. Seasonal flooding may make some caves unsuitable in some years and

reduction in ground water flow could alter cave humidity. Thus, alternate sites are needed for periods with unusual climatic conditions.

- This species can be expected to experience increasing threats in years to come, as more old mines cave in or are closed (often to reduce legal liability of landowners), limiting the availability of suitable hibernacula.
- Wind farms are a recent addition to the landscape in many parts of the United States. Bat fatality at wind turbines has been documented in all regions and in varying habitat conditions across North America. Annual mortality varies, but is conservatively estimated to vary from <2 to nearly 50 bats/turbine/year. Mortalities of northern long-eared bats have been documented, along with all other bat species present in Wisconsin. Current evidence suggests that bat mortality appears to be highest in or near forests, especially along ridge tops, moderate in open areas close to forest in the Midwest, and lowest in open grassland or farmland away from forests. Because bats are long-lived, have low reproductive rates, and appear to be especially vulnerable to wind turbines, solutions are needed to prevent or minimize this new threat, whose cumulative impacts on populations of bats could be significant.
- Removal of nursery trees and loss of foraging habitat damages local breeding populations.
- This species is sensitive to disturbance during hibernation; frequently aroused bats may deplete their energy reserves, potentially leading to mortality from starvation before spring arrives. Cave and mine visitation by recreational cavers, tour groups, and vandals during the winter hibernation period, and large-scale banding efforts is a major threat for this species.
- With a reproductive rate of just one offspring per year per female, damage to a population could be very slow to repair.
- Northern long-eared bats consume a variety of softer-bodied invertebrate prey, limited perhaps only by the size of prey it can physically take (Kunz and Kaiser 1978). As arthropod diversity correlates with plant species diversity, this dietary variability would suggest the need for a diverse forest flora. Non-native plant establishment tends to reduce native plant diversity and could thus negatively impact the prey base for this species.
- Insecticide use in agricultural and forested landscapes may threaten bats through direct contact and indirectly through the reduction of target and non-target prey species. Insecticides are frequently sprayed during bat foraging periods, especially in the early morning, evening, or night, in order to target mosquitoes, avoid killing honeybees, and take advantage of quiet wind conditions. When directly exposed, bats may absorb chemicals through their lungs and skin, or by ingesting contaminated insects or polluted water (Clark 1981). Several studies link mortality of both juvenile and adult bats to organochlorine insecticides such as heptachlor, and dieldrin, which is linked to DDT (no longer used but still persisting in ecosystems) and its metabolites, DDD and DDE. Organochlorine insecticides are believed to kill mostly young bats when the chemicals, concentrated in the fat of the mother's milk, are passed to the pups or when flight begins and fat reserves from lactation are burned. Adult bats are most likely to be affected by fat-soluble toxins released when fat reserves are consumed during migration or hibernation (Clark 1981, 1988, Clark *et al.* 1978a, 1978b).

### **Priority Conservation Actions**

- Protection of hibernacula and maternity roosts from disturbances, possibly by gating entrances with bat compatible gates, is of highest priority.
- The northern long-eared bat has an apparent reliance on mature forest habitats. Tall, wide-diameter, partially dead trees with a high percent of bark remaining are favored by the northern long-eared bat. Such trees tend to be found in over-mature forest stands (Sasse and Perkins 1996, Caceres, unpubl. data). A study in New Hampshire found that northern long-eared bats relied on the largest available snags in a forest stand as summer roosts. Forest management that maintains existing large snags and

provides large trees for future snags should benefit northern long-eared bats (Bats Conservation International 2001).

- Maintenance of adequate habitat for all life history stages and activities, and protection of hibernacula from disturbances, including hydrological changes, are important management requirements.
- Legislation is needed to increase protection of bats during all phases of their life history, i.e., hibernation, foraging, nursery colonies, and summer roost sites.
- Research is needed on most aspects of life history, including hibernation, roosting, and foraging habitat requirements, population dynamics, population trends, and migration and dispersal patterns. An assessment of the habitats needed to support all life history stages and activities is needed before adequate stewardship programs can be devised. Telemetry studies of both sexes are necessary (Kurta 1995). Inventories should be conducted in advance of large-scale habitat modifications that would result in the loss of older forest or removal of standing dead trees within areas known or suspected to contain this species.
- Outreach is needed to educate the public on bat biology and ecology, to reduce unfounded fears and myths, and to provide training for citizens to assist in monitoring efforts.
- A statewide bat management plan is needed to outline a coordinated and comprehensive approach to bat conservation in Wisconsin, and should include identification of and roles for conservation partners.